

Perception and Expectation of Iran Neonatal Transport Expert Regard to Developing Neonatal Transport System in Iran: A Qualitative Research

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ABSTRACT

Introduction: This study was aimed to reach expert's expectations of neonatal transport system for developing neonatal transport system in Iran. **Materials and Methods:** This is a qualitative study conducted by using focus group discussion (FGD) to present expert's perspectives and expectancy about neonatal transport system. Participants was selected from all experts and specialist about neonatal transport in Iran countryside. Finally 48 experts, participate in this study. To data collection 4 FGD were conducted, data were analyzed by content analyses. All subthemes were categorized in main themes according to conceptual relationship as an expert panels opinions. In order to comply with the ethical issues involved in the study was voluntary, also permission for the recording session were taken and confidentiality was also ensured. **Result:** According to FGD results, 11 themes and 90 subthemes were founded related to neonatal transport system, the main identified themes included: Aims, necessity and models of neonatal transport system, organizing the transport system, management and quality of instruments in the transport system, Neonatal transport system staff, Human resource management and issue related to human resources, conditions and requirements of neonatal transport system, facilitating factors in neonatal transport system, information management and communication system and weakness of neonatal transport system. **Conclusion:** Neonatal transport systems in different countries must adapted according to situation and component of each country have different strength and weakness and in implementing a system must attend to geographical conditions, financial ability and access to professionals, health system structure, facilities related to neonatal health care, antenatal services in regain, health care related, health care program about neonates and pregnant women and epidemiological status and mortality and morbidity in deferent locals and regains in countryside.

Key words:

Neonatal transport system, focus group discussion, qualitative research, Iran

INTRODUCTION

The infant mortality rate in the country has been indicating the quality of perinatal care provided in that setting.^[1] Until the last century it was believed that only strong and healthy neonates would be able to live and weak and sick infants were condemned to death. Care of premature and ill infants gradually started in 19th century. Making relation between pediatric, obstetrics, intensive care and primary care was the first step to enhance the quality of care for infants (especially premature and ill infants) and to reduce infant's mortality. Survive of critically ill and premature infants need advanced equipment and trained staff.^[2,3] Considering the cost of equipment and human resource, providing all services and advanced equipments in all health centers is not cost effective.

Regionalized perinatal services start at 1970 due to the importance of fairly access for services from neonates and

mothers who need specialized and equipped centers, Infant mortality, especially premature infants decreased with the implementation of this plan and its implementation is recommended in all countries.^[4,5] The aim of regionalization in neonatology is to assure the same type of care for all the

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newborns regardless their place of birth.^[6,7] However, there is concern that centralization could produce longer response time; ecially in overpopulate urban setting.^[7] Paneth *et al.* study about infant birth and mortality rates in various weights between 1976 and 1978 in New York showed that the mortality rate of newborns do not affected by birthplace hospital. However, infant mortality rates in underweight and premature infants that born in level 1 hospital are 24% more than level 2 centers. So for safe pregnancy, high risk infants, especially premature infants should be born in neonatal intensive care unit (NICU) centers.^[8] In other words, with better prenatal care high-risk pregnancies should be identified and mothers who are likely to give birth to premature and critically ill infants should be transfer to centers that have NICU units. Intrauterine transmissions especially are recommended in cases of <32 weeks gestational period and whose birth weights are less than the 1500 gr.^[9] Unfortunately, the mother's transformation to equipped centers in 50% of cases is not possible due to following reasons: Unpredictability of delivery, unexpected problems in the newborn after a normal pregnancy and inability to transfer high-risk pregnant mothers before delivery. In these cases, after birth the infant was transferred to the hospital with a NICU unit.^[4, 10-12] From 1950 that first neonate transport program were organized in United State of America (USA), in developed countries many protocol and guideline about neonatal transport had prepared and compiled, unfortunately there is no such program in our country.^[13]

World Health Organization reported that infant mortality rate in Iran is 19/1000 live births in 2008, according to this report 60% of under 5 years deaths is an infant's mortality.^[14] Heidarzadeh found that in East Azerbaijan Province, neonatal transport exceeded the 1000 at regional level during 2004. Most of transfers take placed to children referral hospital, but it should be mentioned in 2004 regionalization of prenatal care in this province will not started.^[15] A study in Tehran showed that the majority of gynecologists spend their time in private centers with lack of facilities and many premature infants need to be transferred to public sector hospitals.^[16] Obviously, right regionalization of prenatal care can reduce neonatal transport rate and increase intrauterine transport cases.^[16]

Respect to the positive effect of the transport system in reducing mortality, design and implementation of neonatal transport system is important and many cases of neonatal transfers that take place can explain investment and organizing appropriate programs in this area. Therefore, implementation of neonatal transport system in Iran is unavoidable and purpose of our study is to investigate expert's perception and expectation toward to designing neonatal transport system in Iran.

MATERIALS AND METHODS

This qualitative study was conducted with focus group discussions (FGDs). Participants were selected from

Medical Sciences Universities of Iran, which had experience in infant and neonatal transport. Studies target population comprised, all professionals and experts and informants in the field of neonatal transport. The study was carried out between March and April, 2011 in Tabriz and Tehran.

To determine study sample we tried to include all groups and stakeholders who have experience in neonatal transport program in other countries and also ongoing transfers in Iran such as infant specialist, pediatric specialist, head nurses in NICU, headquarters personnel and Pre-hospital emergency attendants (emergency medical service). Finally 48 persons who had sufficient awareness to problems and requirements about infant transport participate in our study.

The participants were informed about the objective of study at the beginning of FGD session t and their identities were kept confidential. They were reimbursed for travel expenses. Each FGD was recorded using audiotape and lasted 2 h. The study was ended after a saturation of ideas was achieved at the end of fourth FGDs. The taped interviews were transcribed into written texts after each section. The authors analyzed the qualitative data after all transcripts were read several times and coded. Texts were coded and clustered along the developed themes and sub-themes for analysis. Content analysis and comparison of themes across participants were performed and key themes, phrases and practices, were used to organize data in a logical format. Preliminary results were also sent to several participants to improve on the reliability of the result.

Ministry of Health (MoH) took the responsibility to call on key stakeholders for their participation by issuing letters of introduction of the research team. The research team informed participants at all levels about the survey and requested for their voluntary participation. Respondents were reassured of confidentiality of matters under discussion.

RESULTS

According to study findings nurses was 35% of the participant and after that general practitioner, midwife and neonatologist were the greater part of the participant. At the other hand, 56% of participant worked in hospital and 34% in guidance committee of patient transport and health deputy of province [Table 1].

Objectives of neonatal transport system

Setting goals and related indexes for achieving these goals are the first step in any system such as neonatal transport system. As shown in Table 1 the first objective of neonatal transport system is reducing the infant mortality rate. "Due

Table 1: Characteristics of participants in group discussions

Variation	Number	Percentage
Specialist field		
Neonatologist	6	12.5
Pediatric surgery	1	2
Pediatric pulmonologist	1	2
Pediatrician	13	6.5
General practitioner	12	25
Nurse	17	35
Midwife	8	17
Work place		
Hospital	27	56
Guidance committee and health deputy of province	16	34
EMS	5	10

EMS – Emergency medical services

to the high infant mortality rate, transport system is felt to be necessary to face a high risk newborns and infants". Another objective is to improve the quality of services provided to infants by providing the all the services required and is not available for transfer. "Usually more than 5 cases are transferred into same incubator, which decreases the quality of service and increase the infant mortality". On the other hands transport system is forming with the aim of providing services to people of all regions and this issue was raised by participants: "In order to access of people who live in poor regions to required facilities there is a need to transport system". And the last objective that participants in discussions noted was the access of all people to required services: "There is a need to sustainable of the transport system through which services can be improved with lower cost".

Necessity of neonatal transport system

The second issue that was emphasized in discussions is the necessity of neonatal transport system that in this area 13 subthemes have identified. Generalization is performed for optimum use of the services required and increases the efficiency of services and access to services as participants identified it as a critical factor that highlight the need for appropriate transport system: "Due to advances in neonatal care and infant care categories level, cannot provide all the advanced features in all areas equally". Furthermore, resource constraints prevent from the likelihood of providing all services in all areas: "Differences between the treatment and care of infants and adults as well as between adults and infants and between persons who are providing these services are limited Therefore, these infants should be transported to appropriate care centers which have adequate facilities and professionals".

Models of neonatal transport

Neonatal transport may implement in different forms which can be used in different situations and participants were discussed in the following 13 sub points of benefits or disadvantages of each method. According to participants, infant transport system is defined as: "Efforts and performance needed to newborns access to appropriate care at a distance of the prime hospital, so that an infant or newborn can transport in the best circumstances with physiologic stability by appropriate health care team and best means of transport and at the minimum degree of risk". In order to have successful transport, type of transport should be clarified: "It should be clear that if transport system covers whole province or implement just between hospitals." Neonatal transport system demands a coherent inter hospitals networking which covers the all of the hospitals the same region and establish a connection between them: "Infant transport system has regional coordinators to create a network between hospitals". Return transport is one of the important issues that must be addressed in an inter hospitals Networking, in which Infants are transferred to the lower level after receiving the needed services in higher levels and obtain their health: "It is necessary to consider that sometimes there is a to return the baby to prime levels after receiving needed care." One of the cases of neonatal transport standard is defined in terms of mobile NICU which provides the NICU conditions In the form of a mobile unit: "Infant transport system is a portable NICU and its difference with other NICU beds is in existence of a support and coordination system, In other words, in addition to clinical and professional staff, it needs for support and management staff". Transport system may be formed separately for each of the priority groups or can merge to other system and work as Partners Groups; in this regard participants in discussions mentioned some form of merged system related to appropriate neonatal transport system [Table 2]. Finally the last subtheme is about air transport.

Organizing the neonatal transport system

Organizing were identified as a key factor in the success and appropriate performance of infant transport systems that several components such as coordination among involved departments, subunits structures, accountability of each department and logical issues are some of them. In Table 2, 12 sub themes were mentioned by participants.

Most of the participants were believed that regarding to health economy and efficiency issues, there is a need to implement some degree of generalization within a transport system and appropriate facilities for each level should be considered in order to prevent waste of resources. "To provide an advanced ambulance for less developed regions in terms of the economy and management is not justified,

Table 2: Themes and sub-themes of developing neonatal transport system

Theme	Sub themes
Aims of neonatal transport system	Decreased neonatal mortality rate Improving quality of neonatal care Equal distribution of facilities in district level Improving access in poor region
Necessity of neonatal transport system	Regionalization Resource constraint Necessity of specialized services for high-risk infants Cost effectiveness of services Centralizing the services in provinces centers Covered region to determine Increase the rate of utilization and needs of services Consideration of existence of obstetric facilities in rural setting Consideration of regional, local and geographic challenges in system design Specialization in transport system management Appropriate allocation of resources among health programs and prioritize issues Considering the cost of implementing the programs and their effect on system costs Considering the required infrastructures for implementing the plan and developing the system
Models of neonatal transport system	Neonatal transport system Inter hospitals transport system Within hospital transport Inter hospitals network Return (back) transport system Mobile NICU Specialized transport system Integrated infant and neonatal transport system Integrated neonatal transport system with mothers transport system Integrated neonatal transport system with children transport system Integrate neonatal transport system with pre hospital emergency system Prenatal transport support neonatal transports Air transport system
Organizing the transport system	Classification of neonatal transport system Privet sector services Merging the transport team with stabilization team Provide care coordination among the provider Providing inter hospitals coordination Predicting a evaluation and control system Establishment of specific evaluation system System evaluation by independent assessors or governmental assessor system (health department) Predicting an information system Accountability for clinical decision Establishing an organized guidance committee Accountability for supportive decision
Management and quality of instruments in transport system	Make use of independent neonatal ambulance or same ambulance for all patient Ensure the provision of essential equipment Providing the low level area with needed equipment and personals. Predicting the reserved bed at third level centers
Neonatal transport system staff	Centralized purchasing the ambulances and equipment by the Ministry Supportive personal for transport system To determine the on call attending physician Involving the physician in the construction of transport team Involving the trained paramedics in the construction of transport team Predicting a physician in the guidance committee as the leader To determine a person at university level as the director chief Involving the educated and skilled nurses

(Contd...)

Table 2: Contd...

Theme	Sub themes
Human resource management and issue related to human resources	<ul style="list-style-type: none"> Staffing varies depending on the circumstances of each transfer Considering the staff morale Increasing the responsibility of staff Specifying the duties and considering the necessary license for transport team members To determine the permanent members of the transport team that will provide transport services Staff education Teaching the drivers about the medical principles Manage the conflict between the central and provincial experts Predicting a reserved team in each unit or to determine a central supportive transport team Coordination with a heart surgeon
Conditions and requirements of neonatal transport system	<ul style="list-style-type: none"> Stabling the neonatal before transportation Patient safety within transport Determining the standard proposition of transport To determine the indication and necessity of transport To set the guidelines for prioritizing the neonatal transport Reduce the futile functions
Facilitating factors in neonatal transport system	<ul style="list-style-type: none"> To outline the guidelines To ensure the effectiveness of programs Financing and reimbursement for transport members Decreasing the out of packet payment for transport services Appropriate feedback on transport process Utilization of the other sectors infrastructure
Information management and communication system	<ul style="list-style-type: none"> Nursing and medicine information management To improve communication between care providers To provide consultation and telecommunication Application of fax communication facilities Respect to human rights in consultation and telecommunication Facilities to record the calls
Weakness of neonatal transport system	<ul style="list-style-type: none"> Inefficient utilization of resources Lack of awareness of the scheme Unawareness of authorities about necessity of transport Enormous workload in third level Transport by family Failure to implement the proposed scheme among all providers Lack of central financing and stewardship in transport system Lack of timely access to services Utilization of some programs for political propaganda

EMS – Emergency medical services; NICU – Neonatal intensive care unit

so there should be a classification in infant transport system and this classification should be introduced related to infant's transportation." In order to best organize the transport system there is an essential need for collaboration either among different sectors such as public sector and private sector or several related teams including stabilization team and transport team. Coordination should be only in terms of clinical issues and making decisions in issues such as a choice of the bed and the transport should be centralized: "Physician relationship is just related to clinical issues and only guidance committee is responsible for addressing issues such as admissions and beds." On the other hand, like any other system, organization of neonatal transport system, requires evaluation and control systems and also

valid information system. Furthermore, neonatal transport system should have a specified trend in the evaluation process and its performance should be evaluated by professionals according to certain standards. "A separate evaluation chart should be considered to neonatal transportation and a certain score to be allocated annually." Although, in our country, the task of evaluating all health care centers bears responsibility for the health department, some participants were required to make use of independent assessors.

The last issue related to the organization of the neonatal transport is about responsibility of supportive decision and clinical choices. Participants were of the opinion that it is better to devolve the responsibility of support decisions

to guidance committee and in clinical decisions, it is the responsibility of the coordinator neonatologist: “Staff should be responsible for coordination and scientific work should be given the responsibility of the coordinator neonatologist.”

Managerial and political indicators of neonatal transport system

Medical instrument is one of the most important components in the infant transport system and participants in FGD were focused on it from the different perspectives and their opinion is illustrated in Table 2 as 5 subthemes.

According to participants, utilization of independent ambulance or mobilizing ambulance for infants critical may largely promote the transport system and reduce the risks. “Utilization of portable equipment is suggested in order to change the ambulance to specified ambulance”. Basic principles of neonatal care (Heating and ventilation) should be provided at all levels in order to prevent the serious harm to patient. In order to have appropriate instruments and equipment for this purpose, they were suggested centralized purchasing by the health department and comply with national standards, because this way make a positive impact on the appropriate performance and can facilitate the maintenance of equipment’s: “Due to decrease the costs, Integration and ease of learning, purchasing the ambulance and other equipment should be centrally by the health ministry.”

Neonatal transport system staff

Structure of neonatal transport team has a significant impact on its performance. In the discussions, 7 essential elements were identified that is illustrated in Table 2. Neonatal transport system’s support staffs are responsible for coordination and administrative tasks and they are not involved in the operational process. “The staff should also be considered in the regionalization program to reduce the health care professional’s workload.” to appoint a coordinator neonatologist as the ultimate recipient of the transport system and for consulting the team member in terms of infants care transport is necessary: “To avoid disruption in the hospital’s task, a coordinator doctor should be defined separately from on call doctors”. However, doctors, nurses and paramedics are integral components of the transport team. Finally, Infant transport system requires a physician as the director of the guidance committee and a superior administrator at the university level. Since the doctor is fully aware of the process and medical treatment, his presence is necessary for the appropriate implementation of the transport programs. Some participants were believed that it is necessary for director of the guidance committee to be a neonatologist or neonatal fellowship. For an ideal system,

physicians should be guided by the faculty and attending physician of University and transport must be implemented by recommendations of coordinator neonatologist about neonate’s condition.

Human resource management

Today, the role and importance of human resources in the service delivery is identified as the most important factor in organizations. However infant transport system is not excluded from this. In this context, the following 10 issues were identified.

When management of human resources is approved, system will lead to improved organizational performance by improved skills, responsibility and motivation of employees. Staff motivation is the critical factor to increase their participation and performance and it was defined as non-financial and financial tools of incentives to increase staff motivation. “In order to encourage the staff, each faculty should consider specified time for counseling.” Specified professionals is another factor to improve the performance accountability of staff, is, in this regard, there should be a plan to employ the professionals in university level: “Transport staff should not be as the same as units staff because it result in reduced quality, therefore university should use related experts and specified professionals for neonatal transportation.” On the other hand, the necessary training to all personnel involved, including clinical staff and drivers should be provided: “Personnel training is one of the most essential elements of success. All of the individuals, including ambulance driver, should receive the necessary training to enable them to play their roles well.” Due to the limited number of transport teams in each region and possibility of over capacity of simultaneous transport over capacity, a reserved team should be considered for emergencies at each region and all care levels. “When there is a need to transport two cases in the same time, we face several problems. Thus we need to have at least two ambulances at each center.” Given the high percentage of transportations is related to heart problems, in one of the discussions, participants express that the transport system must be closely in relation with cardiac surgeons.

Conditions and requirements of neonatal transport system

Stabilization of infants before transport is one of the important implementations for saving infants in the transport process. “It is better to use the over treatment procedure before transport and to provide maximum services by best stabilization of the neonatal. For example, if the there is a need for in the tube, it will be done in prime hospital.” Another factor is issues related to safety that have considerable impact on transport outcomes and improving

the quality of services: “Infant transport by the scientific method and with proper equipment and trained staff result in reducing the risk and maximum safety.” Condition and facilities of transport must also be standardized by the authorities. Furthermore, to determine the indication and necessity of transport and defining the prioritizing the neonatal transport was discussed by participants. Indication and necessity of transport should be documented and defined by the expertise, in order to prevent conflicts between doctors and to reduce unnecessary transport. Sometimes it is necessary to prioritize the transport of infants which needs to be transported in a same time, prioritization and decision-making take place and to make a decision which lead to most effectiveness. “Decision making to prioritize the transmission should be done by the guidance committee and due to existing facilities. However this is so challenges”.

Facilitating factors in neonatal transport system

Efforts to improve process and promote the transport system performance were discussed in 6 sub themes. Design and develop the operational guidelines for neonatal transport system is one of the requirements of good management. These guidelines are necessary to evaluate the system and check the errors. “A control system for tracking errors and avoid unnecessary referrals should be exist; And for this purpose there should be an appropriate access to accurate and operational guidelines. Required skills must be listed in the guideline and it should be revised for a certain period of time.” After providing the guidelines, the plan should be created for its implementation, otherwise system will fail. “To develop the guideline is not enough. We should assure it is implemented.” In order to improve service quality, expertise and authorizes should create awareness in operational members about their weaknesses. Thus, regarding to participants, feedback mechanism is necessary to improve the quality of services. And ultimately were discussed that, utilization of other sector’s infrastructure, is one of the major factors affecting the performance of the health system and infant transport plan. Because in operational process, many factors affect its performance: “In the process of transport and regionalization, we need other sectors support s as transportation department, health department and etc.”

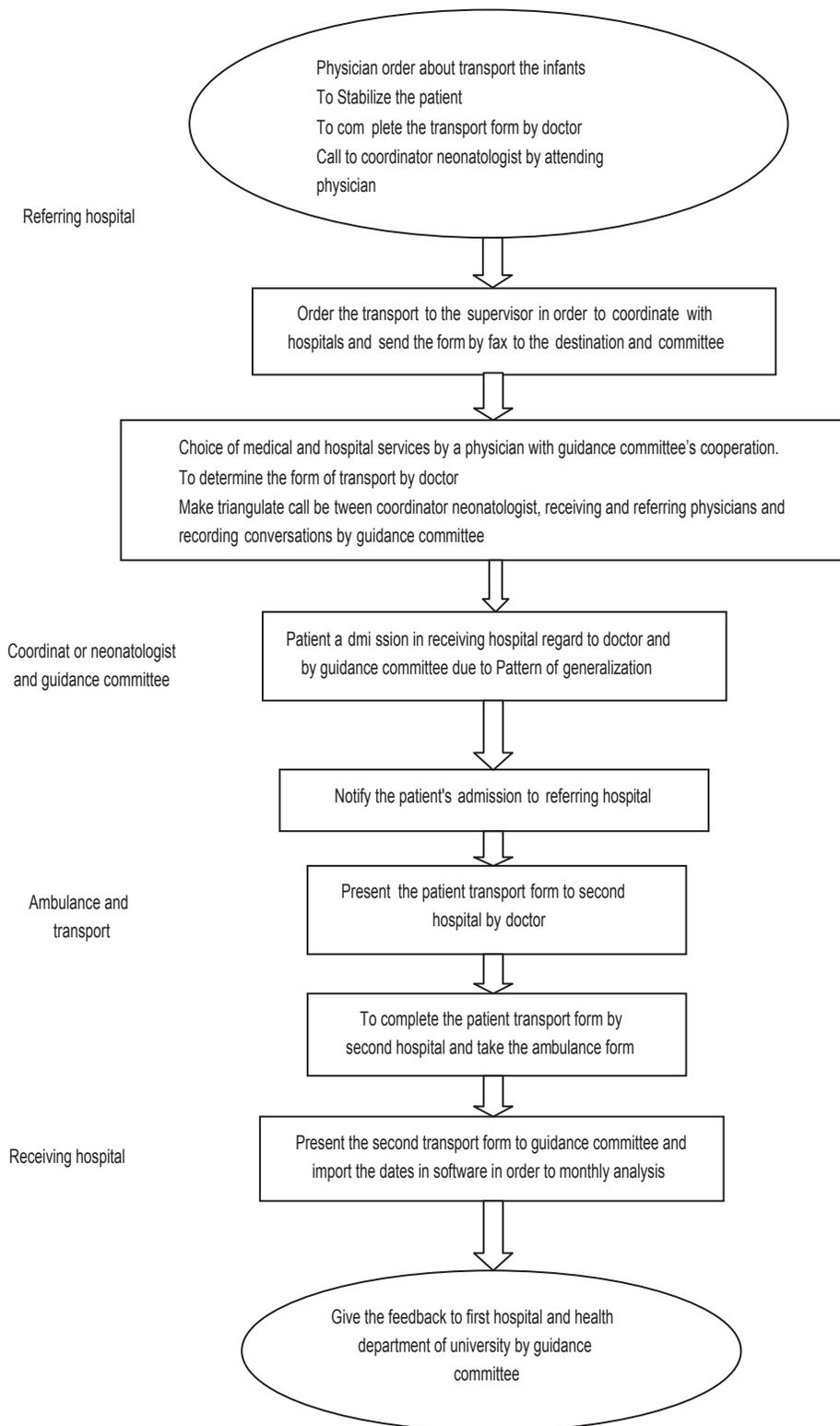
Information management and communication system

Management of the document has considerable importance in implementation and results of transport programs and it is considered as a critical tool for evaluating the outcomes of the transport system. This subject was expressed in discussions by an emphasis on the use of the standardized medical data: “Documentation and infants

medical records are the key elements in the success of the system.” As previously mentioned, improving the effective communication between providers, is an important element in coordination. Communication is not limited to service providers but also it is defined among providers and customers. In this regard, the telephone was known as the most important and effective tool for the assessment, control, communication, assessment and conduct the transport, were attracted participant’s attention: “In the transport system, four major activities are carried out through telephone including: Assessment, control, communication and evaluation.” “Considering telephone consultant, legal responsibilities should be specified (in the Department of Law).” In addition, another tool used to communicate between different centers is the fax. Several advantages and disadvantages were identified for that: “Phone and fax are good because they are fast” but “we cannot use of fax all times, because often fax machine is only in management’s room and also its quality is low”.

Weakness of neonatal transport system

As mentioned in Table 2, lack of clear definition of regionalization and ignorance of authorities in terms of their hospital’s level are the basic problems identified about transportation: “The problem is the lack of definition of levels for hospitals that hospitals are not aware of their level.” The second weakness is the workload of level III centers and inadequate staff. This issue, make coordination and interaction between different levels, problematic. “In larger cities, due to lack of transport facilities, referrals from other regions and increased workload we are faced reduction in service quality”. One of the responsibilities of the committee is trying to reduce the access time to services but due to increased administrative trends, this purpose is not obtained and even this process itself increase the time to access. “In some cases, more than 6 h pass between demand and time of implementing the transport.” Next problem is setting the priority among health plans at the whole country and universes, because in the context, neonatal transport plan is considered as a low priority in policy making and financing. “Already, infant transport system is implemented in some regions, but the problem is lack of proper distribution of resources because of law priority of it for policy makers.” Despite the lack of resources, inefficient use of resources also makes the situation worse: “In small towns, even when advanced facilities exist, but because of cultural issues, they cannot appropriately use them therefore infants are transferred to a higher level.” And the last defect of the system is the utilization of some programs for advertising porous. “Some programs are just a political propaganda and they are virtually impossible to implement such as neonatal air transport.”



Flowchart 1: Suggested flow chart for transporting the INET neonates

Finally according to suggestion of study participants most suitable flow in neonatal transport services according to Iran health system characteristics and infrastructures prepared [Flowchart 1].

DISCUSSION

The necessity of neonatal transport system according to community priorities and health problems should be taking

into account. Appropriate implementations initially need an appropriate network like directed staff for managing transport in a geographical area. This network should have a suitable communication, information and management systems. An appropriate staff direction can lead to improvements in prenatal care and appropriate regionalization in all levels. On the other hand, the mission, objectives and indicators to achieve these goals should be determined for appropriate implementation of the program.

Infant mortality rates in the country in recent years have been a constant trend (About 18/1000 live births) and reducing this rate is one of the health system's overall goals.^[14] In this regard, mechanisms such as increasing quality of services provided to newborn infants by providing all services required in a regional perspective, providing facilities for a proper transport due to priorities in resource allocation and expanding the range of services to all geographic areas should be implemented. These missions were identified to neonatal transport systems in other countries. For example in Canada due to a wide scope of country, transport services is one of basic subjects and from 1960, mothers who live in northern areas, especially mothers with pregnancy complications for appropriate access to specialized services went to the central regions 4 weeks before delivery and only safe and non-scheduled deliveries occur in northern regions.^[17]

In this regard, neonatal transport system in Hungary, which was established in 1989 (Peter Cerny Ambulance), had a positive impact on reducing infant mortality around the time of delivery. The neonatal mortality rate before establishing this system was 15-20/1000 and after implementation of infants transport system reduced to about 5-11/1000.^[18]

National standards for transport system and required human resources for this purpose should be developed, with emphasis on the use of nurses and paramedical personnel. In addition, human resource continuing education is very important factor in neonatal transport system performance and scientific and administrative guidelines and protocols for using in the transfer process should be designed according local and national conditions.

Regionalization in neonatal transport system should be taken in considers and due to resource limitation, facilities should be distributed based on the need of local settings. In this regard, neonatal transport system can use jointly from available facilities and infrastructure of other sectors. Furthermore, scientific and appropriate method must be used to achieve program goals and always we should attempt to improve the quality of provided services according to performance improvement activities.

The design and implementation of any program in the health system need to focus on the main priorities of the system, such as equity, efficiency, effectiveness, access. The interventions that have most impact on public health must to be selected. In Australia due to excessive distribution of residential areas in the country that sometime the nearest service centers is 1000 km far from regional rural delivery, neonatal transport is an important issue.^[17] In Sweden because of the large size and small cities that concentrated in the southern regions of country the transmission is a fundamental subject. About 13% of infants in this country are transferred to higher levels for specialized care.^[17] Transport systems in the Hungarian to transfer newborn infant's to higher-level units for specialize care was established. Fifteen percent of neonates in the Georgia state of USA are born preterm that many of these infants require specialized care in the third and fourth levels.^[19]

In order to evaluate transfer system performance between different regions, certain indicators must be defined for each transmission to determine responsibilities and prevent irregularities. In Australia, for distances <150 km to the neonatal emergency and transport service center, neonatal transport s take place through three ambulances. The airplane is used for distances of 150-2000 km, which is limited in night, weather situation and landing site.^[17]

To success in getting neonatal transport systems goals authorities and policy makers must understand the health system needs and attempts to improve the health indicators by supporting projects and programs that meet the needs of the health system. In this way policy maker should properly allocate resources based on priorities for health systems.^[20]

In the FGDs that have taken place in our study participants believed that anticipating mechanisms to give feedback to providers is crucial for improving the quality of provided services. Finally, it should be noted that neonatal transport system success in each region dependent on a continuous collaboration between community sectors, a constant relationship between general and specialized care and the ability to gain cooperation of other stakeholders in the transport system. Collaboration between delivery service, infant care and specialized care centers, promote the transfer system performance and ultimately improve infants and population health indicators.

After preparing guidelines and planning, the implementation phase is very important. Continuous quality improvement is a key element of a successful system and stakeholders will be aware about their weaknesses and shortcomings.

Neonatal transport programs require appropriate referral systems, management structures and trained transport

personnel. They need to utilize transport equipment, address transport logistics and have a quality improvement program. Local factors such as geography, population density, philosophy and the organization of perinatal services affect the programs function.^[21]

All team members must be aware of the contribution expected of each other. All involved in the execution of a transport need to work collaboratively, in a timely manner and understand their respective accountabilities.^[22]

According to the participants view neonatal transport system success also depends on the structure, socio-economic and cultural context of community. Nonetheless, countries can learn both the successes and the failures of each other's experiences. Experience gained in one country and result obtained may not be implemented in another country directly. International experience suggests some conditional guidance for policy makers and they must also have a system for ensuring that transport system is in compliant with local context.

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